PB 211 917

Part I

EXECUTIVE SUMMARY

A Study of the Economic Impact on the Steel Industry of the Costs of Meeting Federal Air and Water Pollution Abatement Requirements

COUNCIL ON ENVIRONMENTAL QUALITY

Washington, D. C.

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INFORMATION SERVICE
U S Department of Commerce
Springfield VA 22151

July 27, 1972

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EXECUTIVE SUMMARY

INTRODUCTION

This volume is Part I of our final report on the potential economic impact of the costs of meeting Federal air and water pollution abatement requirements. Our report is contained in three separately bound volumes, as follows:

- Part I - Executive Summary
- Part II - The Structure of the Steel Industry
- Part III - The Economic Impact of Pollution Abatement

In this volume we have summarized findings and conclusions which are presented at length in Part II and Part III of our report.

PART II

THE STRUCTURE OF THE STEEL INDUSTRY

Since the end of World War II, the steel industry has grown at a rate of less than 3% per year. In the early 1960's, growth above 7% annually occurred but since 1966, industry output has leveled off, reflecting the lack of vigor in the overall economy.

Steel industry output has historically been, and remains, highly concentrated, with more than 50% of production accounted for by four companies and 75% of output by the eight largest companies. Geographic concentration of production is also significant.

Major steel markets include the automobile, construction, and capital goods industries. The sensitivity of these industries to changes in the level of economic activity is reflected in the sharp responsiveness of steel demand and output to cyclical trends in the general economy. Despite the cyclical nature of demand, steel prices have historically tended to remain rigid in an upward direction. Recently, however, evidence of a partial breakdown in price leadership and increasing price shading has appeared as the industry faced lagging demand and import competition.

Faced with stagnating demand, industry profits fell from a 1966 peak of $1.1 billion to $563 million in 1970. Profits for 1971 were

$568 million in the face of a three million ton decrease in net steel shipments. The achievement of profits comparable to 1970 levels was based on a combination of price increases, improved productivity and management belt tightening as well as some favorable inventory adjustments and foreign tax credits. In spite of lagging profits, industry dividend payouts were not reduced and capital expenditures remained high. Thus increased reliance was placed on long-term debt for financing. In 1971, dividend cuts by most producers became necessary.

Until 1959, the U.S. was a significant exporter of steel. Subsequently, imports, spurred by increasing worldwide steel capacity and low-cost production, exceeded exports and rose rapidly to a level of 18 million tons in 1968, equal to 16.7% of the apparent domestic market. During 1969 and 1970, voluntary restraint arrangements (VRA) negotiated with Japan and the European Economic Community countries limited overall import tonnages although a switch in import product mix to higher value items has seriously hurt the domestic specialty steel industry.

During 1971, imports again rose to about 18 million tons, apparently reflecting noncompliace with VRA quotas, especially by the European Community.

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PART III

THE ECONOMIC IMPACT OF POLLUTION ABATEMENT

1. SUMMARY OF CONCLUSIONS

The potential impact of pollution abatement costs on steel industry growth and profits depends on the following interacting factors which are, at this time, characterized by uncertainty:

- Pollution abatement capital expenditure requirements
- Current industry production capacity
- The cost of adding production capacity
- Reserve capacity required to meet peak demand levels and to accommodate product mix variations
- Requirements for accelerated capital expenditures to replace plant and equipment which cannot be economically "cleaned up"

Considering the effects of these uncertainties, which are discussed in the body of this section and are covered in detail of Part III of this report, the following conclusions regarding growth appear warranted:

- A minimum growth in steel industry shipments to 100 million tons by 1976 can reasonably be expected. To fund pollution abatement capital expenditures, steel producers will be required to do the following:
  - Obtain new borrowings at a rate which will keep the industry at or near its feasible borrowing limits

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- Apply all available internal funds to pollution abatement after provision for dividends at 1971 dollar levels, normal capital expenditures, and working capital

Subject to the potential burden of accelerated capital expenditures, it appears that financing pollution abatement capital expenditures should in the main be possible, given that industry profit performance is as projected.

Growth to a 1976 shipment level of 106 million tons in the face of pollution abatement capital expenditures is dependent on the behavior of the five major variables identified above. Funds needed for pollution abatement capital expenditures, in addition to funds available internally and through borrowing, could range from zero to more than $2 billion, assuming that dividends remain at 1971 levels. Significant dividend reductions to obtain additional funds could result in impaired producer borrowing capacity.

Growth to 1976 shipment levels of 113 million tons may be ruled out on the basis of the inability of the industry to finance the necessary investment. In this case, however, pollution abatement costs are not the controlling factor as expansion of capacity to the level required to insure shipment of 113 million tons would probably not take place even if pollution abatement was not a factor.

The conclusions summarized above are dependent on industry attainment of projected profit levels which is highly sensitive to the

behavior of underlying factors such as prices and productivity. This sensitivity which is highlighted in Part III of the report should be kept in mind in evaluating the applicability of the conclusions over time.* It should also be noted that the economic impact on the steel industry of factors other than pollution abatement, such as occupational safety and health requirements or significant increases in taxes, which could have significant cost impacts, have not been considered in this study.

2. STEEL DEMAND AND PROBABLE SHIPMENTS 1972-1976

Demand for steel measured by domestic steel consumption should recover from depressed 1970-1971 levels, providing that economic recovery from the recession experienced during those years proceeds as anticipated. Assuming sustained economic growth of at least 4% per

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* The price freeze announced by Bethlehem Steel to extend through December 31, 1972 would reduce estimated industry 1971-72 price increases from 8.0% to 7.2%. This would reduce projected industry 1972 Net Income by approximately $100 million. (Exhibit XIV-2, Part III). If 1972 price increases foregone as a result of the freeze were not made up, the cumulative reduction of projected Net Income through 1976 would be approximately $550 million. It is probable that steel producers will make every effort to make up price increases foregone during the freeze as soon as the freeze period ends. Such increases would appear to be justified on the basis of current industry cost and profit factors. The extent and timing of "makeup" price increases will depend on market factors and possibly the effects of price controls. In 1971 Bethelehem Steel was the most profitable of the major steel producers. If Bethelehem is prevented from raising prices after the freeze ends due to profit margin limitations imposed by the Price Commission, it is highly unlikely that less profitable producers could raise prices due to competitive constraints.

year for the period 1972-1976, steel consumption should fall into 120-130 million ton range by 1976.

Net steel shipments by producers are determined by the level of steel exports and imports as well as domestic consumption. Depending on the level of demand, domestic steel production capacity can also be a significant factor. Capacity limitations aside, potential net steel shipments, considering particularly domestic consumption and import penetration should fall within the 106-113 million ton per year range by 1976. Production capacity as a factor limiting potential growth in shipments is discussed below.

3. DOMESTIC STEEL PRODUCTION CAPACITY

Complete and reliable data regarding domestic steel capacity are not available. On the basis of partial information from several published sources and unpublished information made available by the American Iron and Steel Institute estimates of current usable domestic raw steel production capacity have been made. Raw steel capacity is estimated to be in the 155-165 million ton range. After allowing for processing losses and reserve capacity required to meet peak demand loads as well as product mix changes, sustainable steel shipment capacity is estimated to be between 98 million tons and 105 million tons per year.

To develop the capacity to ship 106-113 million tons by 1976, total domestic steel production capacity (allowing for reserve capacity requirements) may have to be expanded by zero to 16 million tons depending on the actual level of current capacity and anticipated 1976 demand.

4. STEEL INDUSTRY CAPITAL EXPENDITURE REQUIREMENTS 1972-1976

Excluding expenditures for pollution abatement, steel industry capital expenditures fall into two categories:

- Expenditures to modernize and replace existing plant and equipment
- Expenditures to increase capacity to meet anticipated demand

Required capital expenditures to modernize and replace existing plant and equipment during the period 1972-1976 are estimated to total $6.85 billion (1971 dollars). Expenditures needed to increase capacity, depending on current capacity and future demand, may range from zero to as much as $6.53 billion over the same period.

5. POLLUTION ABATEMENT COSTS

Air and water pollution abatement cost estimates were supplied by the Council. Because of uncertainties as to costs, the estimated provided were stated in terms of ranges as follows:

- Capital investment requirements were estimated to range from $2.4 - $3.5 billion for the period 1972-1976

- Annual costs, including operating costs, depreciation and interest, were estimated to range from $760 million to $875 million by 1976

Estimated capital expenditure requirements were used for analysis without adjustment. Estimated annual costs as shown were adjusted to conform with current projections of debt required to finance pollution abatement and anticipated interest costs. For purposes of analysis, a 7% investment credit for capital expenditures was assumed.

In addition to capital expenditures for pollution abatement itself, it is also possible that pollution abatement requirements may result in accelerated capital expenditures to replace existing plant and equipment which cannot be economically cleaned up due to age and/or physical condition. A steel industry source has estimated such expenditures to be approximately $2.75 billion, principally to replace obsolescent blast furnaces, sintering facilities, and open hearth furnaces. While it may be preferable to replace a facility rather than to simply clean it up, it may also be preferable to clean up a facility rather than shutting it down, assuming funds for replacement are limited due to other capital demands. It may also be possible for steel producers to reallocate funds for accelerated replacement of blast furnaces, sintering mills and open hearth furnaces which would normally have been used for other facilities replacement or modernization projects over the short term. Because of these factors, it is not

possible to accurately assess the true burden of accelerated capital expenditures over the relatively short term (1972-1976). As a result, economic impact has been evaluated assuming both zero net accelerated capital expenditure requirements and net accelerated capital expenditure requirements of $2.75 billion.

6. IMPACT OF POLLUTION ABATEMENT COSTS ON INDUSTRY GROWTH AND PROFITS

To provide a base for analysis, detailed baseline projections of steel industry profits and cash flow were prepared for the period 1972-1976. Separate projections were prepared assuming shipment levels by 1976 of 100, 106, and 113 million tons. Pollution abatement capital and annual costs were evaluated against the alternative baseline projections to measure potential impact. On the basis of this analysis, conclusions are as follows:

- Steel price increases of approximately 4.3% per year for the period 1973-1976 will be required to cover all steel industry cost increases including pollution abatement annual costs. Such price increases, while higher than Price Commission guidelines, should prove feasible from a market point of view.
- The ability of the steel industry to maintain growth and absorb pollution abatement capital expenditures depends on five major factors characterized by uncertainty:
  - Pollution abatement capital requirements
  - Current industry production capacity
  - The cost of additional capacity
  - Reserve capacity required
  - Accelerated capital expenditure requirements

Considering the effects of the above uncertainties the following conclusions regarding growth appear warranted:*

- With steel shipments by 1976 of 100 million tons and accelerated capital expenditures at the zero level, financing pollution abatement capital expenditures, after provision for normal facilities replacement and working capital would require new long term borrowings of approximately $600 million. This assumes that dividend payouts remain at 1971 dollar levels and that all funds available internally after provision for normal facilities replacement and working capital are used for pollution abatement.

  Given that steel industry growth and profits will equal or come close to levels projected, financing pollution abatement capital expenditures should prove feasible assuming such expenditures are as high as $3.5 billion.

  No provision for repayment of projected new borrowings has been made as it is assumed that such debt would be rolled over at maturity.

- With steel shipments by 1976 of 100 million tons, pollution abatement capital expenditures of $3.5 billion and accelerated capital expenditures of $2.75 billion, the steel industry would be required to raise approximately $800 million dollars in addition to that potentially available through new borrowing and retention of earnings assuming that dividends remain at 1971 dollar levels.** This analysis is sensitive to both the cost of pollution abatement and the accelerated capital expenditures required. For example, if pollution abatement capital expenditure requirements were $2.4 billion, the figure quoted above would be reduced from $800 million to $400 million.

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* For detailed computations see Exhibit XIX (1-4), following Page 66 in Part III of this report.

** Limitations on new borrowings are based on the assumption that debt may not significantly exceed 40% of shareholders equity in any given year. This ratio which approximates current debt/equity relationships is significantly higher than historical levels and may be assumed to approximate a debt ceiling.

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- With steel shipments by 1976 of 106 million tons and present steel product capacity of 110 million tons, financing pollution abatement capital expenditures would require $500 million in addition to that available through new borrowings and retention of earnings, assuming that dividends remain at 1971 dollar levels. This assumes that there are no accelerated capital expenditures.

  If one or more of the following conditions were present, the $500 million figure quoted above would be reduced to zero:

  . Pollution abatement capital expenditures requirements of $2.4 billion

  . Current steel product capacity of 114 million tons

  . Required peaking factors of 4% with current steel product capacity of 110 million tons

  At a current steel product capacity level of 107 million tons, depending on the peaking factor used (4% - 8%) additional funding requirements as defined above could range from zero to $1.1 billion.

- With steel shipments by 1976 of 106 million tons and present steel product capacity of 110 million tons, financing total capital expenditures with the need to spend $2.75 billion for accelerated replacement of plant and equipment would require raising approximately $2 billion in addition to that available through new borrowing and earnings retention, assuming that dividends remain at 1971 dollar levels.

  The above analysis is based on estimated maximum feasible new borrowings of $1.9 billion. To raise such an amount, steel producers will have to satisfy lender credit requirements. In analyzing risk potential lenders normally view the ability of a borrower to maintain dividend payments as a factor indicating the ability of

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the borrower to meet debt service requirements as principal and interest payments on debt must be met before dividends can be paid. With this "reserve" debt service capacity eliminated, say by increasing earnings retention rates to obtain the $2 billion additional funding discussed above, the ability of the steel industry to raise $1.9 billion through new borrowings would be significantly impaired.

If one or more of the following conditions were to be present, additional funding requirements would be reduced to $800 million as opposed to $2 billion.

- Current steel product capacity of 114 million tons

- Required peaking factor of 4% with current capacity of 110 million tons

With additional funding requirements reduced from $2 billion to $800 million, the factors discussed above which limit the use of additional earnings retention to raise the required funds could remain operable although the extent to which they would impact the use of additional retained earnings is uncertain.

If pollution abatement capital requirements were $2.4 billion as opposed to $3.5 billion and one or both of the above conditions were present, additional funding requirements would be reduced from $2 billion to zero.

- Growth to 1976 shipment levels of 113 million tons may be ruled out on the basis of the inability of the industry to finance the necessary investment. In this case, however, pollution abatement costs are not the controlling factor as expansion of capacity to the level required to insure shipment of 113 million tons would not take place even if pollution abatement was not a factor.

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7. REGIONAL EMPLOYMENT IMPACTS

Although it is unlikely that any decrease in overall steel industry employment would take place directly as a result of pollution abatement requirements, it is possible that local employment displacement will be experienced. The pattern of such potential local displacement cannot clearly be defined within the scope of this study.

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